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KATTEN MUCHIN ROSENMAN LLP 575 MADISON AVENUE NEW YORK, NY 10022-2585			EXAMINER	
		GERGISO, TECHANE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/811,493	Applicant(s) OOMMEN ET AL.
	Examiner TECHANE J. GERGISO	Art Unit 2137

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 17 December 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,6-28,30-36 and 41-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,6-28, 30-36, and 41-49 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/06)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

1. This is a Final Office Action in response to the applicant's communication filed on December 17, 2007.
2. The applicant withdraws claims 2-5, 29 and 37-40 the examiner acknowledges the withdrawn claims.
3. Claims 1, 6-28, 30-36, and 41-49 are pending.

Claim Objections

4. Claims 21-26, 28, 32-36 and 41-47 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim *should refer to other claims in the alternative only, and cannot depend from any other multiple dependent claim*. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.
5. Claims 6, 20, 22-26, 30-36 and 41-47 are objected to because of the following: Claim 6, 20, 22-26, 30-36 and 41-47 depend directly or indirectly from withdrawn and non-elected independent claims. Appropriate correction is required.

Response to Arguments

6. Applicant's arguments filed on December 17, 2007 have been fully considered but they are not persuasive.

The applicant argues that in "page 24: second paragraph: that the Assignment Value, for the branch of the Oommen-Rueda tree traversed, is related to the distribution of the ciphertext

calculated and recorded prior to that branch traversal “ and “page 24: second paragraph: that the Assignment Value, for the branch of the Oommen-Rueda tree traversed, is related to the distribution of the ciphertext calculated and recorded prior to that branch traversal.”

The examiner disagrees with the applicant’s analysis because Yoshiura discusses and teaches when the Oommen-Rueda traversed , the assignment value to the distribution of a cipher text is calculated and recorded prior to the branch traversal and this is suggested in column 16 lines 45-59 recited as follows:

“When the bit string determined from the immediately preceding symbol is regarded as a numeral having a value v while the identification number of the symbol-bit string correspondence information being currently used is represented by w with the total number of the symbol-bit string correspondence information being represented by L, the remainder resulting from division of (v+w) by L is allocated as the identification number for the symbol-bit string correspondence information to be next used in the step 108.”

See also Figure 13 and 14 where the values as are assigned for each character at the end of each branch or leaf branch traversing from the root branch through the leaf branch. Therefore, for the above reason, the applicant’s argument is not persuasive to overcome the prior art Chang in view of Yoshiura to place independent claim 1 in condition for allowance.

The applicant's argument to overcome the election requirement mailed on February 20 2007 is not persuasive. The rationale for restriction requirement was clearly presented based on the applicant's disclosure and figures presented. Claims 1 and 27 are grouped to species I because they appear to apply the deterministic embodiment using static Huffman coding. Claims 2, 4 and 28 are grouped to species II because they appear to apply the deterministic embodiment using adaptive Huffman coding. Claims 3, 5, and 29 are grouped to species III because they appear to apply the randomized embodiment using adaptive Huffman coding. Claims 37 and 39 are grouped to species IV because they appear to apply the randomized embodiment using adaptive Huffman coding. For the above reason the restriction made is final and the claim objections made are maintained.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 6-20, 28 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (hereinafter referred to as Chang; US. Pat. No.: 6,885,749) in view of Yoshiura et al. (hereinafter referred to as Yoshiura; US Pat. No: 6,411,714).

As per claim 1:

Chang discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, which Oommen-Rueda tree has a root, branches and leaves, comprising the steps of (column 1: lines 25-60; scrambling; Huffman; data):

- (a) receiving a first character of plaintext (column 1: lines 25-60; receive data; receiver);
- (b) traversing the Oommen-Rueda tree between the root of the Oommen-Rueda tree and a leaf of the Oommen-Rueda tree corresponding to the first character of plaintext and recording an Assignment Value of at least one branch of the Oommen-Rueda tree so traversed (figure 8: 706: Huffman coder/decoder; column 3: lines 30-44);
- (c) calculating a character of cipher text related to the Assignment Value of the at least one branch of the Oommen-Rueda tree so traversed (Figure 14: 1401-1407);
- (d) calculating an Assignment Value for at least one other branch of the Oommen-Rueda tree related to a distribution of the ciphertext previously calculated (Figure 14: 1401-1407);
- (e) receiving a next character of plaintext (column 1: lines 25-60; receive data; receiver).
- (f) traversing the Oommen-Rueda tree between the root of the Oommen-Rueda tree and a further leaf of the Oommen-Rueda tree corresponding to a next character of plaintext (Figure 14: 1401-1407);
- (g) calculating a further Assignment Value for at least one further traversed branch of the Oommen-Rueda tree related to a further distribution of the further ciphertext previously calculated (Figure 14: 1401-1407);

- (h) calculating a further character of ciphertext relating to the further Assignment Value for the at least one further traversed branch of the Oommen-Rueda tree;
- (j) repeating steps (e) through (h) until all of the plaintext has been processed; and
- (j) outputting the ciphertext.

Chang does not explicitly disclose repeating steps b and c until the plaintext has been processed. Yoshiura in analogous art, however, disclose repeating steps b and c until the plaintext has been processed (figure 5: 1023-1025; column 13: lines 30-40; figure 7: 703-707; column 12: lines 5-14). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system disclosed by Chang to include repeating steps b and c until the plaintext has been processed. This modification would have been obvious because a person having ordinary skill in the art would have been motivated to do to provide a procedure of setting the correspondences between the symbols and the bit strings is changed in the course of the data processing and consequently, no repetitive pattern can make appearance in the encrypted data to yield the immunity of the encrypted data can be intensified as suggested by Yoshiura (in column 6: lines 25-30).

As per claim 6:

Chang discloses method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, wherein the Assignment Value for at least one branch traversed is determined in accordance with a Branch Assignment Rule (column 3: lines 30-44).

As per claim 7:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, wherein, when a member of the cipher text alphabet is under-represented in the cipher text generated thus far, the Branch Assignment Rule assigns that member of the cipher text alphabet to at least one of the branches being traversed between the root and the leaf so that that member of the cipher text alphabet is no longer as under-represented as before the assignment (column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60).

As per claim 8:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, wherein when a member of the cipher text alphabet is under-represented in the cipher text generated thus far, the Branch Assignment Rule assigns that member of the cipher text alphabet more frequently than other members of the cipher text alphabet to the branches being traversed between the root and the leaf so that that member of the cipher text alphabet is no longer as under-represented as before the assignment (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 9:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, wherein when, the cipher text alphabet is binary, the Branch Assignment Rule assigns a zero to the majority of branches being traversed between the root and the leaf when

zero is under-represented in the cipher text generated thus far, and assigns a one to the majority of branches being traversed between the root and the leaf when one is under-represented in the cipher text generated thus far (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 10:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein, when the conditional frequency of one member of the cipher text alphabet given a particular sequence of members of the cipher text alphabet in the cipher text generated thus far, is under-represented in the cipher text generated thus far, the Branch Assignment Rule assigns that member of the cipher text alphabet to at least one of the branches being traversed between the root and the leaf so that the said conditional frequency of that member of the cipher text alphabet is no longer as under-represented as before the assignment (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 11:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein, when the conditional frequency of one member of the cipher text alphabet given a particular sequence of members of the cipher text alphabet in the cipher text generated thus far, is under-represented in the cipher text generated thus far, the Branch Assignment Rule assigns that member of the cipher text alphabet more frequently than other members of the

cipher text alphabet to the branches being traversed between the root and the leaf so that the said conditional frequency of that member of the cipher text alphabet is no longer as under-represented as before the assignment (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 12:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein, the Branch Assignment Rule assigns a member of the cipher text alphabet to at least one of the branches being traversed between the root and the leaf, such assignment being determined by comparing a number associated with the frequency of at least one member of the cipher text alphabet in the cipher text generated thus far, with a number associated with the output of a pseudo-random number generator (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 13:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein when the cipher text alphabet is binary, the Branch Assignment Rule assigns a member of the binary alphabet to at least one of the branches being traversed between the root and the leaf, such assignment being determined by comparing a number associated with the frequency of a member of the binary alphabet in the cipher text generated thus far, with a number associated with the output of a pseudo-random number generator (column 8: lines 63-67; column

9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 14:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein the Branch Assignment Rule assigns a member of the cipher text alphabet to at least one branch being traversed between the root and the leaf, such assignment being determined by a number associated with the output of a pseudo-random number generator (column 3: lines 55-67; figure 4: 1012-1017; figure 3).

As per claim 15:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein when the cipher text alphabet is binary, the Branch Assignment Rule assigns a member of the binary alphabet to at least one branch being traversed between the root and the leaf, such assignment being determined by comparing a number associated with the a pseudo-random number with a range equal to half the domain of the generator generating the pseudo-random number (column 3: lines 55-67; figure 4: 1012-1017; figure 3).

As per claim 16:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein the Branch Assignment Rule assigns a member of the cipher text alphabet of cardinality R to at least one branch being traversed between the root and the leaf, such

assignment being determined by invoking at least two times (R minus 1) pseudo-random numbers, the domains of at least one of the pseudo-random numbers being related to the frequencies of the occurrences of the cipher text characters generated thus far, and the domain of at least one of the other of the pseudo-random numbers having a mean of i/R for the i th branch of each node encountered in the traversal, where i is the relative position of the branch quantified by a pre-specified ordering of the branches, and the Branch Assignment Rule being such that where the cipher text character associated with the i th branch in the said ordering is under-represented in the cipher text generated thus far, it is no longer as under-represented (column 3: lines 55-67; figure 4: 1012-1017; figure 3; column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; figure 4: 1011-1017; column 15: lines 40-60; column 19: lines 1-12).

As per claim 17:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein when the cipher text alphabet is binary; the Branch Assignment Rule assigns a member of the binary cipher text alphabet to at least one branch being traversed between the root and the leaf, such assignment being determined by invoking at least two pseudo-random numbers, the domain of the first of these pseudo-random numbers being related to the frequency of the occurrence of zero in the cipher text, and the domain of a second of these pseudo-random numbers having a mean of 0.5, and the Branch Assignment Rule being such that when any character of the cipher text alphabet is under-represented in the cipher text generated thus far, it is no longer as under-represented (column 3: lines 55-67; column 8: lines 63-67; column 9: lines

1-10; column 11: lines 1-14; column 12: lines 30-42; column 15: lines 40-60; column 19: lines 1-12; figure 3; figure 4: 1012-1017).

As per claim 18:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein when the cipher text alphabet is binary, the Branch Assignment Rule assigns a member of the binary cipher text alphabet to at least one branch being traversed between the root and the leaf, such assignment being determined by comparing at least the output of two invoked pseudo-random numbers, the first of which has a domain having a mean between a number associated with the frequency of zeros and the quantity 0.5, and the second of which is a pseudo-random number having a domain whose mean is 0.5, and the Branch Assignment Rule being such that where any member of the cipher text alphabet is under-represented in the binary cipher text generated thus far, it is no longer as under-represented (column 3: lines 55-67; column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; column 12: lines 30-42; column 15: lines 40-60; column 19: lines 1-12; figure 3; figure 4: 1012-1017).

As per claim 19:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree wherein when the cipher text alphabet is binary, the Branch Assignment Rule assigns a member of the binary alphabet to at least one branch being traversed between the root and the leaf by utilizing at least two pseudo-random numbers, zero being assigned when a first pseudo-random number is less than a second pseudo-random number, where the generation of the second

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pseudo-random number is bounded between a number associated with the frequency of zeros in the cipher text generated thus far and the quantity of one minus the said number associated with the frequency of zeros in the cipher text generated thus far (column 3: lines 55-67; column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; column 12: lines 30-42; column 15: lines 40-60; column 19: lines 1-12; figure 3; figure 4: 1012-1017).

As per claim 20:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, comprising the further steps of, after at least one traversal of the Oommen-Rueda Tree, recalculating a number associated with the frequency weight of at least one of the nodes of the Oommen-Rueda Tee including the internal nodes and the leaves depending therefrom, and thereafter restructuring the Oommen-Rueda Tree in accordance with a Tee Restructuring Rule (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; column 12: lines 30-42; column 15: lines 40-60).

As per claim 21:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, comprising the further step of receiving first key data associated with an initial seed for at least one of the generators of the pseudo-random numbers utilized by the Branch Assignment Rule (column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; column 12: lines 30-42; column 15: lines 40-60).

As per claim 27:

Chang discloses a method for decoding cipher text, comprising the steps of:

- (a) receiving a first character of cipher text (column 1: lines 25-60; descramble; Huffman; data; receive data; receiver);
- (b) utilizing an Oommen-Rueda Tree having a structure corresponding to the Oommen-Rueda Tree initially utilized by the Encoder and utilizing the same Branch Assignment Rule as utilized by the Encoder to provide the Assignment Values for the branches depending from the root, traversing such Oommen-Rueda Tree from the root towards a leaf, the first character of cipher text determining the branch to then be traversed (figure 8: 706: Huffman coder/decoder; column 3: lines 30-44);

Chang does not explicitly disclose if a leaf has not been reached, utilizing the same Branch Assignment Rule as utilized by the Encoder to provide Assignment Values for the branches depending from the node that has been reached, receiving the next character of cipher text, and continuing to traverse the Oommen-Rueda Tree from the node that has been reached towards a leaf, the current symbol of cipher text determining the branch to then be traversed; when a leaf is reached, recording the plaintext character associated with the label of the leaf, the root becoming the node that has been reached for the purpose of further processing repeating the steps until all symbols of cipher text have been processed. Yoshiura in analogous art, however, disclose if a leaf has not been reached, utilizing the same Branch Assignment Rule as utilized by the Encoder to provide Assignment Values for the branches depending from the node that has been reached, receiving the next character of cipher text, and continuing to traverse the Oommen-Rueda Tree

from the node that has been reached towards a leaf, the current symbol of cipher text determining the branch to then be traversed; when a leaf is reached, recording the plaintext character associated with the label of the leaf, the root becoming the node that has been reached for the purpose of further processing repeating the steps until all symbols of cipher text have been processed (column 3: lines 55-67; column 8: lines 63-67; column 9: lines 1-10; column 11: lines 1-14; column 12: lines 30-42; column 15: lines 40-60; column 19: lines 1-12; figure 3; figure 4: 1012-1017).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system disclosed by Chang to include if a leaf has not been reached, utilizing the same Branch Assignment Rule as utilized by the Encoder to provide Assignment Values for the branches depending from the node that has been reached, receiving the next character of cipher text, and continuing to traverse the Oommen-Rueda Tree from the node that has been reached towards a leaf, the current symbol of cipher text determining the branch to then be traversed; when a leaf is reached, recording the plaintext character associated with the label of the leaf, the root becoming the node that has been reached for the purpose of further processing repeating the steps until all symbols of cipher text have been processed. This modification would have been obvious because a person having ordinary skill in the art would have been motivated to do to provide a procedure of setting the correspondences between the symbols and the bit strings is changed in the course of the data processing and consequently, no repetitive pattern can make appearance in the encrypted data to yield the immunity of the encrypted data can be intensified as suggested by Yoshiura (in column 6: lines 25-30).

As per claim 28:

Claim 28 is substantially similar to claim 27 except the limitation of creating an Oommen-Rueda Tree structure corresponding to the Oommen-Rueda Tree initially by the Encoder which is disclosed by Yoshiura (in figure 8). Therefore, claim 28 is rejected with the same rationale given above to reject claim 27.

As per claim 48:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, wherein the ciphertext possesses Statistical Perfect Secrecy (Column 3: lines 50-65; Column 5: lines 47-62).

As per claim 49:

Yoshiura discloses a method for encoding plaintext to create ciphertext using an Oommen-Rueda tree, wherein the ciphertext output is at least one of displayed, transmitted, and stored (Column 3: lines 50-65; Column 4: lines).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See the notice of reference cited in form PTO-892 for additional prior art

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Techane J. Gergiso whose telephone number is (571) 272-3784. The examiner can normally be reached on 9:00am - 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/T. J. G./

Examiner, Art Unit 2137

/Emmanuel L. Moise/

Supervisory Patent Examiner, Art Unit 2137